

U.S. Appln. No. 09/818,402  
Reply to Office Action dated May 20, 2005

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450100-03091

### IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. An identifier indicating the status of each claim is provided.

#### Listing of Claims

1. (currently amended) A magnetic tape recording apparatus for recording digital data on tracks of a magnetic tape by using a rotary head, comprising:

formatting means for adding error correcting code to each of first group data including video data, audio data, or search data, and second group data including subcode data related to said first group data, and for formatting said first group data and said second group data so that they are continuously disposed on the tracks of said magnetic tape; and

supply means for supplying the data formatted by said formatting means to said rotary head so as to record the data on said magnetic tape, wherein:

said formatting means continuously disposes ~~139~~ sync blocks on each of said tracks, each of said ~~139~~ sync blocks having ~~111~~ a predetermined number of bytes;

~~among said 139 sync blocks, 121 comprising second sync blocks each second sync block consisting consist of a two-byte detection pattern for detecting the sync block, three-byte identification information for identifying the sync block, 96-byte main data, and 10-byte inner error correcting code added to said identification information and said main data, and the a remaining quantity of 18 sync blocks each consist-consisting of the two-byte detection pattern, three-byte identification information, 96-byte an outer error correcting code, and the 10-byte inner error correcting code; and~~

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said outer error correcting code is provided for each group of the ~~139~~-sync blocks obtained by dividing ~~2224~~-third sync blocks contained in ~~sixteen~~-a first quantity of tracks by ~~sixteen~~-a first quantity of planes, or for each group of the ~~139~~-sync blocks obtained by dividing ~~1668~~-fourth sync blocks contained in a second quantity of ~~twelve~~-tracks by a second quantity of ~~twelve~~-planes, or for each group of the ~~139~~-sync blocks obtained by dividing ~~1112~~-fifth sync blocks contained in a third quantity of ~~eight~~-tracks by a third quantity of ~~eight~~-planes, and

said sync blocks are arranged on said magnetic tape so that ~~the~~-a distance between the sync blocks belonging to ~~the~~-an identical plane is constant among the planes.

2. (original) A magnetic tape recording apparatus according to claim 1, wherein the video data is high definition video data compressed by an MP@HL or MP@H-14 method.

3. (currently amended) A magnetic tape recording method for use in a magnetic tape recording apparatus for recording digital data on tracks of a magnetic tape by using a rotary head, said magnetic tape recording method comprising:

a formatting step of adding error correcting code to each of first group data including video data, audio data, or search data, and second group data including subcode data related to said first group data, and formatting said first group data and said second group data so that they are continuously disposed on the tracks of said magnetic tape; and

a supply step of supplying the data formatted in said formatting step to said rotary head so as to record the data on said magnetic tape, wherein:

said formatting step continuously disposes ~~139~~-sync blocks on each of said tracks,

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each of said ~~139~~-sync blocks having ~~111~~ a predetermined number of bytes;

~~among said 139-sync blocks, 121 comprising second sync blocks each consist~~  
consisting of a two-byte detection pattern for detecting the sync block, three-byte identification  
information for identifying the sync block, ~~96-byte-main data, and 10-byte-inner error correcting~~  
code added to said identification information and said main data, and ~~a the remaining 18-quantity~~  
of the sync blocks each consist consisting of the two-byte detection pattern, the three-byte  
identification information, ~~96-byte-outer error correcting code, and the 10-byte-inner error~~  
correcting code; and

said outer error correcting code is provided for each group of the ~~139~~-sync blocks  
obtained by dividing ~~2224-third~~ sync blocks contained in a first quantity of sixteen-tracks by a  
first quantity of sixteen-planes, or for each group of the ~~139~~-sync blocks obtained by dividing  
~~1668-fourth~~ sync blocks contained in a second quantity of twelve-tracks by a second quantity of  
twelve-planes, or for each group of the ~~139~~-sync blocks obtained by dividing ~~1112-fifth~~ sync  
blocks contained in a third quantity of eight-tracks by a third quantity of eight planes, and said  
sync blocks are arranged on said magnetic tape so that ~~the-a~~ distance between the sync blocks  
belonging to ~~the-an~~ identical plane is constant among the planes.

4. (currently amended) A recording medium for storing a computer readable  
program for allowing a magnetic tape recording apparatus to record digital data on tracks of a  
magnetic tape by using a rotary head, said computer readable program comprising:

a formatting step of adding error correcting code to each of first group data  
including video data, audio data, or search data, and second group data including subcode data  
related to said first group data, and formatting said first group data and said second group data so

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that they are continuously disposed on the tracks of said magnetic tape; and

a supply step of supplying the data formatted in said formatting step to said rotary head so as to record the data on said magnetic tape, wherein:

said formatting step continuously disposes ~~139~~-sync blocks on each of said tracks, each of said ~~139~~-sync blocks having ~~111~~ a predetermined number of bytes;

~~among said 139-sync blocks, 121 comprising second~~ sync blocks each second sync block consisting ~~consist~~ of a two-byte detection pattern for detecting the sync block, three-byte identification information for identifying the sync block, ~~96-byte~~ main data, and ~~10-byte~~ inner error correcting code added to said identification information and said main data, and the remaining ~~18~~ quantity of sync blocks each ~~consist~~ consisting of the two-byte detection pattern, the three-byte identification information, ~~96-byte~~ outer error correcting code, and the ~~10-byte~~ inner error correcting code; and

said outer error correcting code is provided for each group of the ~~139~~-sync blocks obtained by dividing ~~2224~~ third sync blocks contained in a first number of sixteen tracks by a first number of sixteen planes, or for each group of the ~~139~~-sync blocks obtained by dividing ~~1668~~ fourth sync blocks contained in a second quantity of twelve tracks by a second quantity of twelve planes, or for each group of the ~~139~~-sync blocks obtained by dividing ~~1112~~ fifth sync blocks contained in a third quantity of eight tracks by a third quantity of eight planes, and said sync blocks are arranged on said magnetic tape so that ~~the~~ a distance between the sync blocks belonging to ~~the~~ an identical plane is constant among the planes.

5. (canceled)

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6. (currently amended) A magnetic tape recording apparatus for recording digital data on tracks of a magnetic tape by using a rotary head, comprising:

formatting means for adding error correcting code to each of first group data including video data, audio data, or search data, and second group data including subcode data related to said first group data, and for formatting said first group data and said second group data so that they are continuously disposed on the tracks of said magnetic tape; and

supply means for supplying the data formatted by said formatting means to said rotary head so as to record the data on said magnetic tape, wherein:

said formatting means continuously disposes ~~141~~-sync blocks on each of said tracks, each of said ~~141~~-sync blocks having ~~111~~ a predetermined number of bytes;

~~among said 141-sync blocks, 123-comprising second sync blocks each second sync block consisting~~ consist of a two-byte detection pattern for detecting the sync block, three-byte identification information for identifying the sync block, ~~96-byte~~ main data, and ~~10-byte~~ inner error correcting code added to said identification information and said main data, and ~~the a quantity of remaining 18-sync blocks each consist~~ consisting of the two-byte detection pattern, the three-byte identification information, ~~96-byte~~ outer error correcting code, and the ~~10-byte~~ inner error correcting code; and

said outer error correcting code is provided for each group of the ~~141~~-sync blocks obtained by dividing ~~2256-third~~ sync blocks contained in a first quantity of sixteen-tracks by a first quantity of sixteen-planes, or for each group of the ~~141~~-sync blocks obtained by dividing ~~1692-fourth~~ sync blocks contained in a second quantity of twelve-tracks by a second quantity of twelve-planes, or for each group of ~~141~~-sync blocks obtained by dividing ~~1128-fifth~~ sync blocks contained in a third quantity of eight-tracks by a third quantity of eight-planes, and said sync

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blocks are arranged on said magnetic tape so that ~~the~~a distance between the sync blocks belonging to ~~the~~an identical plane is constant among the planes.

7. (original) A magnetic tape recording apparatus according to claim 6, wherein the video data is high definition video data compressed by an MP@HL or MP@H-14 method.

8. (currently amended) A magnetic tape recording method for use in a magnetic tape recording apparatus for recording digital data on tracks of a magnetic tape by using a rotary head, said magnetic tape recording method comprising:

a formatting step of adding error correcting code to each of first group data including video data, audio data, or search data, and second group data including subcode data related to said first group data, and formatting said first group data and said second group data so that they are continuously disposed on the tracks of said magnetic tape; and

a supply step of supplying the data formatted in said formatting step to said rotary head so as to record the data on said magnetic tape, wherein:

said formatting step continuously disposes ~~141~~-sync blocks on each of said tracks, each of said ~~141~~-sync blocks having ~~111~~a predetermined number of bytes;

~~among said 141-sync blocks, 123 comprising second~~ sync blocks each second sync block consisting ~~consist~~ of a two-byte detection pattern for detecting the sync block, three-byte identification information for identifying the sync block, ~~96-byte~~ main data, and ~~10-byte~~ inner error correcting code added to said identification information and said main data, and ~~the a~~ quantity of remaining ~~18~~-sync blocks each consisting ~~consist~~ of the two-byte detection pattern,

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the three-byte identification information, ~~96-byte~~ outer error correcting code, and the ~~10-byte~~ inner error correcting code; and

said outer error correcting code is provided for each group of the ~~141~~-sync blocks obtained by dividing ~~2256~~-~~third~~ sync blocks contained in a first quantity of sixteen tracks by a first quantity of sixteen planes, or for each group of the ~~141~~-sync blocks obtained by dividing ~~1692~~-~~fourth~~ sync blocks contained in a second quantity of twelve tracks by a second quantity of twelve planes, or for each group of ~~141~~-sync blocks obtained by dividing ~~1128~~-~~fifth~~ sync blocks contained in a third quantity of eight tracks by a third quantity of eight planes, and said sync blocks are arranged on said magnetic tape so that ~~the~~ a distance between the sync blocks belonging to ~~the~~ an identical plane is constant among the planes.

9. (currently amended) A recording medium for storing a computer readable program which allows a magnetic tape recording apparatus to record digital data on tracks of a magnetic tape by using a rotary head, said computer readable program comprising:

a formatting step of adding error correcting code to each of first group data including video data, audio data, or search data, and second group data including subcode data related to said first group data, and formatting said first group data and said second group data so that they are continuously disposed on the tracks of said magnetic tape; and

a supply step of supplying the data formatted in said formatting step to said rotary head so as to record the data on said magnetic tape, wherein:

said formatting step continuously disposes ~~141~~-sync blocks on each of said tracks, each of said ~~141~~-sync blocks having ~~111~~ a predetermined number of bytes;

among said ~~141~~-sync blocks, ~~123~~ comprising second sync blocks each second

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sync block consisting ~~consist~~ of a two-byte detection pattern for detecting the sync block, three-byte identification information for identifying the sync block, ~~96-byte~~ main data, and ~~10-byte~~ inner error correcting code added to said identification information and said main data, and ~~the~~ a remaining quantity of 18 sync blocks each consisting ~~consist~~ of the two-byte detection pattern, the three-byte identification information, ~~96-byte~~ outer error correcting code, and the ~~10-byte~~ inner error correcting code; and

said outer error correcting code is provided for each group of the ~~141~~ sync blocks obtained by dividing ~~2256~~ third sync blocks contained in a first quantity of sixteen tracks by a first quantity of sixteen planes, or for each group of the ~~141~~ sync blocks obtained by dividing ~~1692~~ fourth sync blocks contained in a second quantity of twelve tracks by a second quantity of twelve planes, or for each group of ~~141~~ sync blocks obtained by dividing ~~1128~~ fourth sync blocks contained in a third quantity of eight tracks by a third quantity of eight planes, and said sync blocks are arranged on said magnetic tape so that ~~the~~ a distance between the sync blocks belonging to the identical plane is constant among the planes.

10. (canceled)

11. (currently amended) A magnetic tape recording apparatus for recording digital data on tracks of a magnetic tape by using a rotary head, comprising:

formatting means for adding error correcting code to each of first group data including video data, audio data, or search data, and second group data including subcode data related to said first group data, and for formatting said first group data and said second group data so that they are continuously disposed on the tracks of said magnetic tape; and



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supply means for supplying the data formatted by said formatting means to said rotary head so as to record the data on said magnetic tape, wherein:

said formatting means continuously disposes ~~135~~-sync blocks on each of said tracks, each of said ~~135~~-sync blocks having ~~114~~ a predetermined number of bytes;

~~among said 135-sync blocks, 118 comprising second~~ sync blocks each second sync block consisting ~~consist~~ of a two-byte detection pattern for detecting the sync block, three-byte identification information for identifying the sync block, ~~99-byte~~ main data, and ~~10-byte~~ inner error correcting code added to said identification information and said main data, and ~~the a~~ quantity of remaining ~~17~~-sync blocks each ~~consist~~ consisting of the two-byte detection pattern, the three-byte identification information, ~~99-byte~~ outer error correcting code, and the ~~10-byte~~ inner error correcting code; and said outer error correcting code is provided for each group of the ~~135~~-sync blocks obtained by dividing ~~2160~~ third sync blocks contained in a first quantity of sixteen-tracks by a first quantity of sixteen-planes, or for each group of the ~~135~~-sync blocks obtained by dividing ~~1620~~ fourth sync blocks contained in a second quantity of twelve-tracks by a second quantity of twelve-planes, or for each group of ~~135~~-sync blocks obtained by dividing ~~1080~~ fifth sync blocks contained in a third quantity of eight-tracks by a third quantity of eight planes, and said sync blocks are arranged on said magnetic tape so that ~~the a~~ distance between the sync blocks belonging to the identical plane is constant among the planes.

12. (original) A magnetic tape recording apparatus according to claim 11, wherein the video data is high definition video data compressed by an MP@HL or MP@H-14 method.

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13. (currently amended) A magnetic tape recording method for use in a magnetic tape recording apparatus for recording digital data on tracks of a magnetic tape by using a rotary head, said magnetic tape recording method comprising:

a formatting step of adding error correcting code to each of first group data including video data, audio data, or search data, and second group data including subcode data related to said first group data, and formatting said first group data and said second group data so that they are continuously disposed on the tracks of said magnetic tape; and

a supply step of supplying the data formatted in said formatting step to said rotary head so as to record the data on said magnetic tape, wherein:

said formatting step continuously disposes ~~135~~-sync blocks on each of said tracks, each of said ~~135~~-sync blocks having ~~114~~ a predetermined number of bytes;

~~among said 135-sync blocks, 118 comprising second sync blocks each second sync block consisting~~ consist of a two-byte detection pattern for detecting the sync block, three-byte identification information for identifying the sync block, ~~99-byte~~ main data, and ~~10-byte~~ inner error correcting code added to said identification information and said main data, and ~~the a quantity of~~ remaining 17-sync blocks each ~~consist~~ consisting of the two-byte detection pattern, the three-byte identification information, ~~99-byte~~ outer error correcting code, and the ~~10-byte~~ inner error correcting code; and

said outer error correcting code is provided for each group of the ~~135~~-sync blocks obtained by dividing ~~2160~~ third sync blocks contained in a first quantity of sixteen-tracks by a first quantity of sixteen-planes, or for each group of the ~~135~~-sync blocks obtained by dividing ~~1620~~ fourth sync blocks contained in a second quantity of twelve-tracks by a second quantity of twelve-planes, or for each group of ~~135~~-sync blocks obtained by dividing ~~1080~~ fifth sync blocks

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contained in a third quantity of eight tracks by a third quantity of eight planes, and said sync blocks are arranged on said magnetic tape so that ~~the~~ a distance between the sync blocks belonging to the identical plane is constant among the planes.

14. (currently amended) A recording medium for storing a computer readable program which allows a magnetic tape recording apparatus to record digital data on tracks of a magnetic tape by using a rotary head, said computer readable program comprising:

a formatting step of adding error correcting code to each of first group data including video data, audio data, or search data, and second group data including subcode data related to said first group data, and formatting said first group data and said second group data so that they are continuously disposed on the tracks of said magnetic tape; and

a supply step of supplying the data formatted in said formatting step to said rotary head so as to record the data on said magnetic tape, wherein:

said formatting step continuously disposes ~~135~~-sync blocks on each of said tracks, each of said ~~135~~-sync blocks having ~~114~~ a predetermined number of bytes;

~~among said 135-sync blocks, 118 comprising second sync blocks each second sync block consisting~~ consist of a two-byte detection pattern for detecting the sync block, three-byte identification information for identifying the sync block, ~~99 byte~~-main data, and ~~10 byte~~ inner error correcting code added to said identification information and said main data, and ~~the a quantity of remaining 17-sync blocks each consist~~ consisting of the two-byte detection pattern, the three-byte identification information, ~~99 byte~~-outer error correcting code, and the ~~10 byte~~ inner error correcting code; and

said outer error correcting code is provided for each group of the ~~135~~-sync blocks

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obtained by dividing ~~2160~~third sync blocks contained in a first quantity of sixteen~~-tracks~~ by a first quantity of sixteen~~-planes~~, or for each group of the ~~135~~-sync blocks obtained by dividing ~~1620~~fourth sync blocks contained in a second quantity of twelve~~-tracks~~ by a second quantity of twelve~~-planes~~, or for each group of the ~~135~~-sync blocks obtained by dividing ~~1080~~fifth sync blocks contained in a third quantity of eight~~-tracks~~ by a third quantity of eight~~-planes~~, and

said sync blocks ~~are~~ arranged on said magnetic tape so that ~~the~~a distance between the sync blocks belonging to the identical plane is constant among the planes.

15. (canceled)

16. (currently amended) A magnetic tape recording apparatus for recording digital data on tracks of a magnetic tape by using a rotary head, comprising:

formatting means for adding error correcting code to each of first group data including video data, audio data, or search data, and second group data including subcode data related to said first group data, and for formatting said first group data and said second group data so that they are continuously disposed on the tracks of said magnetic tape; and

supply means for supplying the data formatted by said formatting means to said rotary head so as to record the data on said magnetic tape, wherein:

said formatting means continuously disposes ~~135~~-sync blocks on each of said tracks, each of said ~~135~~-sync blocks having ~~114~~a predetermined number of bytes;

~~among said 135-sync blocks, 118 comprising second sync blocks each second sync block consisting~~ consist of a two-byte detection pattern for detecting the sync block, three-byte identification information for identifying the sync block, ~~97-byte~~ main data, and ~~12-byte~~

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inner error correcting code added to said identification information and said main data, and the a  
quantity of remaining 17-sync blocks each consist of the two-byte detection pattern, the three-  
byte identification information, 97-byte outer error correcting code, and the 12-byte inner error  
correcting code; and

said outer error correcting code is provided for each group of the 135-sync blocks  
obtained by dividing 2160-third sync blocks contained in a first quantity of sixteen-tracks by a  
first quantity of sixteen-planes, or for each group of the 135-sync blocks obtained by dividing  
1620-fourth sync blocks contained in a second quantity of twelve-tracks by a second quantity of  
twelve-planes, or for each group of the 135-sync blocks obtained by dividing 1080-fifth sync  
blocks contained in a third quantity of eight-tracks by a third quantity of eight-planes, and

said sync blocks ~~are~~ arranged on said magnetic tape so that ~~the a~~ distance between  
the sync blocks belonging to the identical plane is constant among the planes.

17. (original) A magnetic tape recording apparatus according to claim 16,  
wherein the video data is high definition video data compressed by an MP@HL or MP@H-14  
method.

18. (currently amended) A magnetic tape recording method for use in a  
magnetic tape recording apparatus for recording digital data on tracks of a magnetic tape by  
using a rotary head, said magnetic tape recording method comprising:

a formatting step of adding error correcting code to each of first group data  
including video data, audio data, or search data, and second group data including subcode data  
related to said first group data, and formatting said first group data and said second group data so

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that they are continuously disposed on the tracks of said magnetic tape; and

a supply step of supplying the data formatted in said formatting step to said rotary head so as to record the data on said magnetic tape, wherein:

said formatting step continuously disposes ~~135~~-sync blocks on each of said tracks, each of said ~~135~~-sync blocks having ~~114~~ a predetermined number of bytes;

~~among said 135-sync blocks, 118 comprising secon~~ sync blocks each second sync block consisting ~~consist~~ of a two-byte detection pattern for detecting the sync block, three-byte identification information for identifying the sync block, ~~97-byte~~ main data, and ~~12-byte~~ inner error correcting code added to said identification information and said main data, and ~~the a~~ quantity of remaining 17-sync blocks each consist of the two-byte detection pattern, the three-byte identification information, ~~97-byte~~ outer error correcting code, and the ~~12-byte~~ inner error correcting code; and

said outer error correcting code is provided for each group of the ~~135~~-sync blocks obtained by dividing ~~2160~~ third sync blocks contained in a first quantity of sixteen tracks by a first quantity of sixteen planes, or for each group of the ~~135~~-sync blocks obtained by dividing ~~1620~~ fourth sync blocks contained in a second quantity of twelve tracks by a second quantity of twelve planes, or for each group of the ~~135~~-sync blocks obtained by dividing ~~1080~~ fifth sync blocks contained in a third quantity of eight tracks by a third quantity of eight planes, and

said sync blocks ~~are~~ arranged on said magnetic tape so that ~~the a~~ distance between the sync blocks belonging to the identical plane is constant among the planes.

19. (currently amended) A recording medium for storing a computer readable

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program which allows a magnetic tape recording apparatus to record digital data on tracks of a magnetic tape by using a rotary head, said computer readable program comprising:

a formatting step of adding error correcting code to each of first group data including video data, audio data, or search data, and second group data including subcode data related to said first group data, and formatting said first group data and said second group data so that they are continuously disposed on the tracks of said magnetic tape; and

a supply step of supplying the data formatted in said formatting step to said rotary head so as to record the data on said magnetic tape, wherein:

said formatting step continuously disposes ~~135~~ sync blocks on each of said tracks, each of said ~~135~~ sync blocks having ~~114~~ a predetermined number of bytes;

~~among said 135 sync blocks, 118 comprising second sync blocks each second sync block consisting~~ consist of a two-byte detection pattern for detecting the sync block, three-byte identification information for identifying the sync block, ~~97-byte~~ main data, and ~~12-byte~~ inner error correcting code added to said identification information and said main data, and ~~the a~~ quantity of remaining ~~17~~ sync blocks each consist of the two-byte detection pattern, the three-byte identification information, ~~97-byte~~ outer error correcting code, and the ~~12-byte~~ inner error correcting code; and

said outer error correcting code is provided for each group of the ~~135~~ sync blocks obtained by dividing ~~2160~~ third sync blocks contained in a first quantity of sixteen tracks by a first quantity of sixteen planes, or for each group of the ~~135~~ sync blocks obtained by dividing ~~1620~~ fourth sync blocks contained in a second quantity of twelve tracks by a second quantity of twelve planes, or for each group of the ~~135~~ sync blocks obtained by dividing ~~1080~~ fifth sync blocks contained in a third quantity of eight tracks by a third quantity of eight planes, and

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said sync blocks ~~are~~ arranged on said magnetic tape so that the a distance between the sync blocks belonging to the identical plane is constant among the planes.

20. (canceled)